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**PROPOSED MINIMUM WATER LEVEL CRITERIA
FOR LAKE OKEECHOBEE, THE EVERGLADES,
AND THE BISCAYNE AQUIFER WITHIN THE SOUTH
FLORIDA WATER MANAGEMENT DISTRICT**

Appendix E -

Minimum Flows and Levels
Literature Review

Prepared by Staff of:

Planning Department

South Florida Water Management District

West Palm Beach, Florida

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Appendix E - Minimum Flows and Levels Literature Review

The following sections describe the guidelines and methods that were used to conduct the literature search and review reports that were received.

INTRODUCTION

Information was needed that describes the range of water levels that occur during drought conditions within **hydric soils (organic peat and marl)** within the Everglades and similar peat or marl based wetland systems. This search was limited primarily to include studies that were conducted within south Florida, and to document water depths that occur naturally during drought conditions within the following 5 soil types:

Loxahatchee peat

Everglades peat

Perrine marl

Ochopee marl

Rockland marl

INFORMATION NEEDED

The specific information that we sought for each of the above five soils types included the following:

1. What are the optimum conditions for the formation of each soil type?

2. What is the minimum water depth, duration and frequency of occurrence that water levels fall below ground level during a drought for each soil type?. In other words, on average, how low do water levels drop below ground during low water years? How long do these events last? and what is their return frequency (1 in 3 year event, 1 in 10 year event, etc.)?

Results of the literature search identified those technical publications or reports that discussed these specific hydric soil types and the hydrological conditions associated with each soil type during drought periods.

The District was also interested in reviewing publications that:

1. documented the nature and extent of impacts that occurred within the Everglades (or any other south Florida wetland system) due to altered hydroperiods, reduced water levels, or overdrainage.
2. identified the effects of fire within the Everglades system.

SEARCH CRITERIA

The following topics and key words were used as a basis for a search using the Dialog® literature review service through the SFWMD library:

Florida hydric soils

Optimum conditions for the formation of:

Loxahatchee peat

Everglades peat

Perrine marl

Ochopee marl

Rockland marl

S. Florida organic peat soils

S. Florida marl soils

Soil subsidence (in the Everglades),

Everglades water levels,

Role of fire, effects of fire in the Everglades, fire return frequency

Effects of drought in the Everglades

Effects of drought on Everglades plant communities

Effects of altered hydroperiods in the Everglades

Drainage, overdrainage, and reduced water level impacts in the Everglades

OTHER SOURCES

In addition, an examination was made of the District library and of prior technical publications and reports. Professional staff were also surveyed to determine if they knew of, or had copies of, relevant literature. Four recent water level/ hydroperiod studies conducted for and by the District were reviewed, in conjunction with a review of bibliographies from the articles and reports obtained.

REVIEW OF REPORTS

Once the search was completed, District staff reviewed this list of references and obtained copies of those articles and reports that appeared to include water level or hydroperiod data for natural systems within the Everglades for detailed examination. A group comprised of wetland biologists, agricultural engineers and a soils scientist was assigned to read the selected documents, summarize directly pertinent information and indicate the degree to which the document was useful for the purposes of the investigation. All documents that were received by August 30, 1996 were examined by District staff to ascertain their relevance to this study.

The final product of this work was a bibliography of wetland literature related to naturally occurring ranges of hydroperiods and water levels for different plant communities. Each relevant article was summarized, using a standard format that included the following information:

- (1) reference citation;
- (2) study location;
- (3) study purpose;
- (4) study period;
- (5) vegetation communities;
- (6) water levels;
- (7) hydroperiod (days per year that water was above land surface); and
- (8) other.

The focus of the review was to document natural water level and hydroperiod information for Everglades soil types; however, the "other" category was included in case the reviewer encountered additional information which could potentially be useful during subsequent wetland impact evaluations.

RESULTS

Results of the consultant reports and prior studies by District staff were examined first. A report by Environmental Sciences and Engineering (1991) provided information on natural water levels and hydroperiods throughout the South Florida Water Management District and included water level and hydroperiod information specific to the Lower West Coast Planning Area (LWCPA) in Glades, Hendry, Lee and Collier counties. The Gee and Jenson (1993) report focused on the Corkscrew Regional Ecosystem Watershed area and included summaries of additional hydroperiod and water level studies within the LWCPA. The Final Report of an expert panel, which was convened by the District in 1994 to examine water level effects on wetlands in the LWCPA. Finally, a literature review was conducted by the SFWMD (1995) to document hydrologic impacts on wetlands in the LWCPA.

The articles and reports that were identified in the literature search are listed in the bibliography that follows. The presence of an asterisk (*) in front of the citation indicates that a copy of the article was obtained for review. Those articles or reports that included natural water level and hydroperiod information that were particularly relevant to our work in the Everglades are listed in the literature cited section of the main report.

Ref. No.	Reference
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2	Alexander, T.R. and A.G. Crook 1984. Recent vegetational changes in South Florida. In: Environments of South Florida: Present and Past II, 2nd Edition, Memoir II, Miami Geol. Soc., Coral Gables, Fla. pp. 199-210.
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